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## BIOGRAPHY.

FRANZ SCHMIDT.

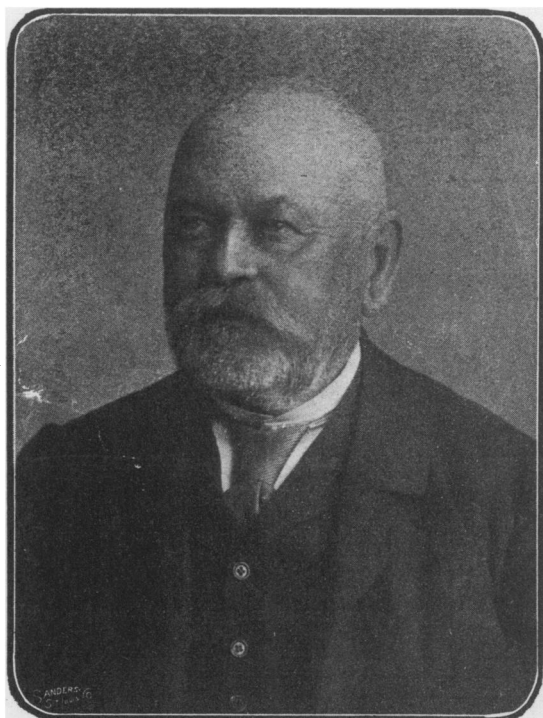
BY DR. GEORGE BRUCE HALSTED.

On the fifteenth of December, 1902, will be fitly celebrated in Hungary the centenary of the birth of Bolyai János, but the man through whom the world come to possession of this truest genius will not be present.

On the seventh of March, 1901, at Budapest, in his seventy-fifth year, died the architect Franz Schmidt, whose name will ever be justly connected with that of John Bolyai.

Until my investigations in 1896 at Budapest, Kolozsvár and Maros-Vásárhely, what was known of Bolyai came wholly from a brief article by Franz Schmidt, then living at Temesvár, entitled "Aus dem Leben zweier ungarischer Mathematiker, Johann und Wolfgang Bolyai von Bolya," Grunert's Archiv, Bd. 48, 1868, page 217. This was translated into Italian by Angelo Forti under the title: "Intorno alla vita ed agli scritti di Wolfgang e Giovanni Bolyai di Bolya matematici ungheresi," and published in the *Bullettino di Bibliografia e di storia delle scienze matematiche et fisiche*. T. I. Rom, 1868.

But Schmidt had written the article at the prompting of Hoüel, who translated it into French and published it first in the *Mémoires de la Société des sciences physiques et naturelles de Bordeaux*, Tome V, Bordeaux 1867. He afterward prefixed it to his translation of John Bolyai's *Science Absolute of Space* in 1868.



FRANZ SCHMIDT.

In a "Note du Traducteur" Hoüel says: "The name of Bolyai has become inseparable from these profound discoveries. It was therefore a duty for European science to draw this name from an unjust oblivion.

The author of the Notice of which we publish the translation, M. Fr. Schmidt, has consecrated himself to this work of reparation with an indefatigable devotion not discouraged either by the slowness of communication between the different parts of the Hungarian empire, or by the difficulty of procuring, even in the native state of Bolyai, the necessary details about the man who has rendered it celebrated.

It is also to the learned architect of Temesvár that I owe the possession of the excessively rare work of John Bolyai, which I have reproduced after the Notice of its author, certain that it cannot fail to excite the interest of all those who truly love science.

By this publication, la Société des Sciences physiques et naturelles continues the work which it commenced by inserting in its preceding volume the researches of Lobachevski on the same subject. May this homage rendered to the Hungarian geometer decide his compatriots to produce from his papers, deposited in the College of Maros-Vásárhely, the remarkable works which they must contain, and of which we know as yet only the titles."

It was from this same copy of the Latin text sent from Temesvár to Hoüel by Schmidt, sent to Schmidt by Professor Samuel Szabó, that in 1868 G. Battaglini made the Italian version published by him in his *Giornale di Matematiche*.

Schmidt begins his paper as follows [I translate from a copy he presented me while I was with him at Budapest in his peaceful home on the banks of the beautiful blue Danube, at Rudolf-rakpart 8]: "The biographical sketch that I here trace is still very incomplete; but as there seems little likelihood of the appearance soon of a detailed life-history, I publish what I have been able to learn from information printed, oral or manuscript, in the hope that any who are in position to add to or make more precise these data, may be induced soon to complete what is here given." A quarter of a century passed away before the world knew anything further of John Bolyai.

In June, 1891, appeared my translation: "THE SCIENCE ABSOLUTE OF SPACE *Independent of the Truth or Falsity of Euclid's Axiom XI (which can never be decided a priori)*. By John Bolyai. In the introduction to the first edition of this I say: "Beyond the *Appendix*, whose translation into English is here given for the first time, John Bolyai published nothing; and the thousand pages of manuscript which he left have never been read by a competent mathematician. They are in the library of the Reformed College of Maros-Vásárhely. What discoveries might lie hidden in his papers!" So I formed the project of making the journey from Austin to Maros-Vásárhely, and entered into correspondence with Professor Koncz, a pupil of John Bolyai's father, who succeeded to his professorial chair and residence.

Professor Koncz wrote me in Latin, and finally sent me precious documents which I planned to incorporate in a more extensive Life of Bolyai. On

February 14th, 1895, he sent me a French translation of the letter written in Magyar by John to his father from Temesvár, on November 3d, 1823, which fixes the date of John Bolyai's creation of the non-Euclidean geometry. I gave an English translation of this wonderful letter in the Introduction to the fourth edition of my "Science Absolute."

At last in July, 1896, in Budapest on my way to Maros-Vásárhely, I met and sojourned with Franz Schmidt himself, who long had been my correspondent. Many things he told me. For example, how first he came to know of John Bolyai. "My father," said he, "Anton Schmidt, was architect in Temesvár, 1817—1860, during which period he had often to build military structures. In later years he often told me of an officer of engineers, a Siebenburger (a Transylvanian, that is a Magyar from Erdély) with whom he always feared to come into contact. He related how this Magyar exhibited, to demonstrate the strength of his arm and the firmness of his Damascus sword, to each of his visitors, how he cut off with a single stroke stout iron nails which had been driven into the door post. That was our Bolyai János."

Franz Schmidt had visited Maros-Vásárhely in 1893 to find the grave of János, and arrange for the erection of a monument over it. He said: "John's grave was, even up to 1894, wholly unrecognizable, without any mark. Only his then still living nurse, Juliana Szöcs, who had attended upon him for eight years and who buried him, could show me the place." In the journal "Közérdek," published at Maros-Vásárhely, on November 11th, 1894, is the following note: "John Bolyai's grave for thirty-four years was without any mark, like to the ground. In 1893 Architect Franz Schmidt visited Maros-Vásárhely. To his indefatigable zeal we owe it, that the Mathematico-Physical Society of Budapest, by a subscription, erected to the author of the Appendix a pyramid of trachyte."

On my arrival at Maros-Vásárhely I had scarcely closed the door of my room at the "Transylvania" when in rushed a handsome old Magyar gentleman, threw his arms around me and kissed me! This was Professor Koncz József. The great chest containing John Bolyai's papers was opened for me. I was particularly struck with his writings on the Theory of Imaginaries, where he far surpassed Gauss, explaining the square root of minus one ( $\sqrt{-1}$ ), the  $i$  of Gauss, as a new unit, for a new set of numbers qualitatively different from the numbers previously used, but no more imaginary than fractions or negative numbers. This is the view to which the world gradually attained unhelped by Bolyai's genius, for his work thereon, though sent to Leipzig to contest for a prize in 1838, had never been published. Long before seeing it I had suggested as a name for the new unit the word Neomon, giving neomic numbers in place of the unfortunately named imaginary numbers.

Even more was I struck with a manuscript treatise entitled "Raumlehre." Perhaps my enthusiasm was contagious. That year (1896) began a new epoch in the world's knowledge of Bolyai. That it was still Franz Schmidt will appear from the following excerpt which I translate from an article by Stäckel and

Engel, Math. Annalen, B. 49, pp. 149—206, 1897. "That we now find ourselves in more favorable position, is due before all to the persistence and devotion of architect Franz Schmidt of Budapest, who for thirty years continuously has worked to elucidate and expound the part of the two Bolyais in the history of the non-Euclidean geometry.

In December, 1896, the Royal Society of Sciences of Goettingen graciously put at his disposal a copy of the Correspondence between Wolfgang Bolyai and Gauss, and in concert with him one of us published in the Goettingen Nachrichten a selection of the mathematical part of this Correspondence.

But we owe still more to Architect Schmidt. In collaboration with his son, Prof. Dr. Martin Schmidt of Pressburg, he has subjected the papers left by the two Bolyais to a new inspection and has sent to us a series of communications about the results. But especially has he made accessible to us certain writings hitherto unknown, written in the Magyar language."

These Magyar documents are those into possession of which I had come years before, for a wonder independently of Franz Schmidt, and had translated, sending in August, 1895, a translation to Maros-Vásárhely to Professor Koncz József for him to review and annotate, This he did. But though I treasure his nine folio pages of annotation, I could not make up my mind to publish my translation simply because it was almost wholly about the father, Bolyai Farkas, while it is the son, Bolyai János, upon whom the world's interest should be centered. I wrote this to Professor Koncz in 1895 and begged for documents about János, for a picture of János, for any notes or remarks or anything pertaining to the immortal János, the most perfect case of genius in the world's history. On September 28th, 1895, he made a most precious and splendid response, as a few sentences from his letter will show. He says :

"I have the honor to send you : 1. Biographic data about Wolfgang Bolyai, written by John Bolyai. N. B. The lines underlined in red are not "*conformes à la vérité*."

2. Biographic data on John Bolyai written by Coleman Szily, first Secretary of the Hungarian Academy of Sciences, from the notes of Gregory Bolyai.

3. The will of John Bolyai and his signatures at different epochs.

4. The photograph of Wolfgang Bolyai, taken on his death bed. N. B. There does not exist any portrait of John Bolyai.

5. An extract from the studies of John Bolyai in 1818.

I have not been able to procure any details about the "duels of John Bolyai."

By the munificence of the Hungarian Academy of Science, Franz Schmidt was able in 1899 in conjunction with Paul Stäckel to publish the entire Bolyai-Gauss correspondence in a beautiful quarto of 208 pages. He had in 1897 at his own expense issued the first translation of the Science Absolute in Magyar, fulfilling thereby, as he says, a wish cherished for thirty years.

At the Bolyai János celebration next December, entwined in honor with the genius of the master must be the devotion of Franz Schmidt.